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Central Intelligence Agency



Washington, D.C. 20505

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DIRECTORATE OF INTELLIGENCE

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31 JUL 1986

MEMORANDUM FOR: Marion V. Creekmore
Deputy Assistant Secretary of State
for Near Eastern and South Asian Affairs
Department of State

FROM: [REDACTED]
Chief, Strategic Resources Division
Office of Global Issues

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SUBJECT: Kuwaiti Oil System Damage [REDACTED]

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I would like to direct your attention to our attached assessment of the damage to the Kuwaiti oil system caused by the bombings of 17 June 1986. While the bombings failed to significantly disrupt production and exports, the reduced export capacity heightens Kuwait's vulnerability by reducing flexibility in the oil export system. The bombings dramatize the vulnerability of the Kuwaiti export system to attack from knowledgeable saboteurs. The report comments on Kuwait's need to improve security procedures and its stockpile of critical spare parts. If you or members of your staff have questions concerning the report, please call [REDACTED]

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Attachment:

Kuwaiti Oil System Damage: After the Shock [REDACTED]
GI M 86-20171, July 1986, [REDACTED]

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[Redacted]

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SUBJECT: Kuwaiti Oil System Damage [Redacted]

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OGI/SRD/SFB/[Redacted] sdw (31 July 1986)

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DIRECTORATE OF INTELLIGENCE

31 July 1986

Kuwaiti Oil System Damage: After the ShockSummary

In the late afternoon of 17 June 1986, presumed Iranian-backed assailants set off five simultaneous explosions at key Kuwaiti oil facilities. The explosions badly damaged several key manifolds which feed crude oil to the tank farms and tanker loading facilities at Mina al Ahmadi, through which nearly all Kuwaiti exports are shipped. The bombings failed to significantly disrupt production and exports, largely because the Kuwaiti system is operating below capacity. The damage initially cut Kuwait's export capacity by 50 percent to about 1.1 million b/d--about the level of exports in early June. Emergency repairs and new pipeline connections installed to bypass the damage restored capacity and production to about 1.6 million b/d by mid-July. Restoration of full capacity of about 2 million b/d might not be completed until later this summer. Until repairs are finished, the reduced export capacity heightens Kuwait's vulnerability by reducing operational flexibility. Although the bombings dramatize the vulnerability of the Kuwaiti export system to attack from knowledgeable saboteurs, the incident also demonstrates the ability of the system to absorb major damage and continue production and exports.

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This memorandum was prepared by [redacted] Strategic Resources Division, Office of Global Issues with a contribution from [redacted] International Issues Division, Office of Imagery Analysis. Comments may be directed to [redacted] Chief, Strategic Resources Division, OGI [redacted]

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Kuwaiti Oil System Damage: After the Shock

The Kuwaiti production and export system is relatively simple in design and operation. Crude oil is pumped from three main producing areas in the northern, central and southern parts of the country to storage facilities at the **North and South Tank Farms**--part of the **Mina al Ahmadi** export complex (see map and map inset). These tank farms feed crude to tanker loading facilities at the North Pier by gravity flow and to the Sea Island Terminal, located about nine miles offshore, through optional loading pumps. Crude oil from the South Tank Farm is also fed by gravity flow to the **Mina al Ahmadi** refinery (323,000 b/d capacity) and the **Shu'aybah** refinery (195,000 b/d capacity). In May Kuwait's production--including its share of the Neutral Zone--reached approximately 1.7 million b/d, its highest level in four years. In early June, however, production had slipped to 1.2 million b/d due to slack summer demand, according to the US Embassy. Despite the attacks, production averaged 1.2 million b/d in June and about 1.6 million b/d in July.

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Although Kuwait is highly dependent on the Mina al Ahmadi export complex, the production and export system is mechanically simple and resilient to damage. Except for auxiliary booster pumps at the onshore Sea Island pumphouse, all pumps are located upstream from the tank farms in the system's 26 gas oil separation plants (GOSPs), thus decentralizing these critical components. An interruption of flow downstream from the GOSPs can be dealt with by repairing or bypassing damaged pipes and valves--a relatively simple task compared with replacing pumps and drivers.

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The Damage

The most significant damage from the 17 June explosions was to the **Central Mixing Manifold (CMM)**, which blends crude delivered from a number of central and southern fields and distributes the blended crude stream to either the North or the South Tank Farms. According to US Embassy reporting, 90 percent of the CMM was destroyed (Figure 1) and will need to be replaced. The mixers at the CMM require no pumps, but are designed for specific ranges of crude grades and flow volumes. Custom manufacture and installation of the new mixing manifold will take about three months according to industry estimates. Kuwait can construct bypass lines around the CMM, but without this facility crude streams from the central fields cannot be blended. Unless buyers are willing to accept unblended crude oil from these fields, production from this area would have to be shut in.

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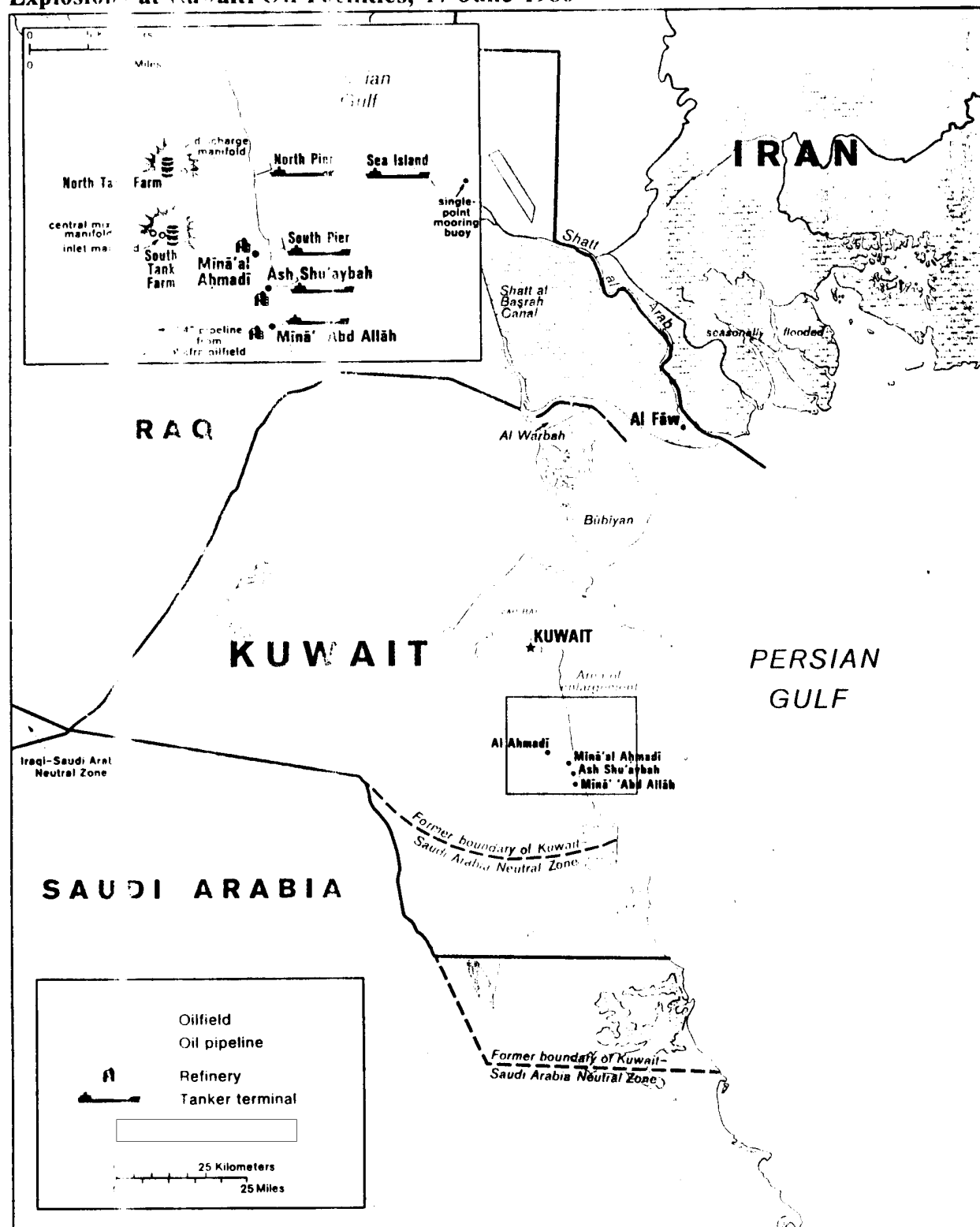
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Explosion at Kuwaiti Oil Facilities, 17 June 1986



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[REDACTED]

An explosion at the inlet manifold to the South Tank Farm (Figure 2) which delivers blended crude from the CMM and other sources to the tank farm also caused major damage. We estimate full restoration of the manifold could take up to two months. Damage to the distribution portion of the North Tank Farm discharge manifold (Figure 3), which controls the flow of crude from the tank farm to the North Pier and the Sea Island, was repaired within a few days. Isolated explosions at a valve (location not known) controlling crude oil flow from the South Tank Farm to the Shu'aybah refinery and at the Maqwa 124 oil well caused only minor damage. The damages to the manifolds forced Kuwait to restrict production to 800,000 b/d during the first two days after the attacks. [REDACTED]

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The Kuwaiti Response

The Kuwaitis moved quickly to repair damage to the North Tank Farm discharge manifold. As a result, they were able to send crude through the manifold within two days of the attack, permitting resumption of tanker loading operations at the North Pier. Use of the Sea Island was apparently suspended until incoming flow was restored to the South Tank Farm. To increase crude export flow, the Kuwaitis next installed a line to permit production from the Burgan field, the largest in Kuwait, to flow to the North Tank Farm and on to the North Pier. This new line apparently enabled Kuwaiti production to rise to about 1.1 million b/d five days after the attack. [REDACTED]

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At the same time, pipeline crews were installing another connection from the Burgan field to the 24-inch line connecting the Wafra field in the Neutral Zone to the South Tank Farm, enabling Kuwait to raise production nine days after the attack to about 1.6 million b/d. Until this line was installed, the Mina al-Ahmadi refinery, which is fed crude from the South Tank Farm, reportedly had to cut back its operations. The refinery apparently was able to resume full operations by 26 June upon completion of the connection between the Burgan field and the South Tank Farm. [REDACTED]

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The Kuwaiti response to the attack illustrates the flexibility and repairability of the export system. The only serious problem encountered was the damage to the CMM. Even with the CMM out of service, the Kuwaitis were able to reroute export crude by repairing or bypassing other damaged facilities. Within nine days of the attack, Kuwaiti production capacity had recovered to about 1.6 million b/d--enough to handle current export levels. [REDACTED]

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The impact of the attacks on exports would have been considerably greater if the Kuwaitis had been operating near their 2 million b/d capacity level. The low output rates caused

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by the market slump and Kuwaiti production restrictions provide a large cushion of surplus capacity to draw upon in an emergency.

[REDACTED]

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A Nice Try

The saboteurs apparently had detailed knowledge of the Kuwaiti oil export system because the targets chosen could have led to a protracted disruption of exports had the attacks been more successful. [REDACTED]

[REDACTED]

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In this case, the Kuwaiti refinery operations would have had to rely totally on available stocks in the South Tank Farm. Stocks on hand there at the time of attacks would have lasted only four days if refinery runs had continued at their pre-attack levels and no crude had been exported. These stocks could not be replenished until the connection to the South Tank Farm from the Burgan field was installed. [REDACTED]

[REDACTED]

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[REDACTED] While the impact on Kuwaiti production would have been minor, the fire would have been a strong reminder to the public of Kuwait's vulnerability. [REDACTED]

[REDACTED]

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Kuwait's Heightened Vulnerability

Until the CMM is repaired or bypassed, Kuwait's production capacity will be reduced and system flexibility will be restricted. The CMM plays an important role in transferring crude between the North and South Tank Farms, so the lack of the CMM puts greater importance on the North and South Tank Farm inlet manifolds and thereby increases the vulnerability of the entire system. Lower production capacity also increases Kuwaiti

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vulnerability by reducing the ability to offset production losses in one part of the system with higher production in another part. [REDACTED]

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Kuwaiti Security and Countermeasures

At the time of the explosions, the Army had responsibility to protect Kuwaiti oil facilities. [REDACTED]

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[REDACTED]

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According to Embassy reporting, the Kuwaitis are planning to increase security around key petroleum installations in response to the attack. Additional steps the Kuwaitis could undertake to improve their protection and preparedness are increasing stockpiles of critical spare parts and intensifying security checks of operating personnel and repair crews with access to key facilities. [REDACTED]

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construction of a permanent bypass line which could be used in an emergency. The investigation of the explosions has not yet revealed hard evidence or clues indicating who was behind the attack. [REDACTED]

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[REDACTED] The Kuwaitis assume that the bombings were instigated by Iran. [REDACTED]

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